

ORIGINAL ARTICLE

Low-back pain in HTLV-I-associated myelopathy/tropical spastic paraparesis: nociceptive or neuropathic?

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Study design: Cross-sectional.

Objectives: To describe characteristics of low-back pain in human T-cell lymphotropic virus type I (HTLV-I)-associated myelopathy/tropical spastic paraparesis (HAM/TSP) patients and to identify its neuropathic and/or non-neuropathic pain components.

Setting: A reference center for the care of patients with HAM/TSP in Rio de Janeiro, Brazil.

Methods: A total of 90 patients with HAM/TSP referred by tertiary care centers were consecutively assessed. The patients were submitted to a clinical protocol that included Visual Analogue Scale (VAS), Timed Up and Go Test, Bodily Pain Domain of the Short Form 36 Health Status Questionnaire, *Douleur Neuropathique 4 Questions* (Neuropathic Pain 4 Questions) (DN4) and McGill Pain Questionnaire.

Results: The prevalence of low-back pain in the studied sample was 75.5%; pain interferes with physical functioning and worsens with movement and physical effort. It can be relieved by analgesics and rest. Average pain intensity was 51.2 mm on VAS and 1.72 on DN4. The most frequent words used to describe low-back pain were throbbing, burning, jumping and aching. Surprisingly, 32.4% patients pointed the lower extremities as the most painful and used different descriptors. The most common drugs used were analgesics, nonsteroidal anti-inflammatory drugs and tricyclic antidepressants.

Conclusions: Low-back pain in HAM/TSP patients has mainly nociceptive characteristics. Conversely, descriptors for lower extremities pain suggest a neuropathic origin.

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Introduction

Tropical spastic paraparesis is a myelopathy caused by the human T-cell lymphotropic virus type I (HTLV-I) and is clinically characterized by a chronic and progressive spastic paraparesis, with several degrees of sphincter and sensory disturbances.^{1,2} It is known as HTLV-I-associated myelopathy/tropical spastic paraparesis (HAM/TSP).

HTLV-I-associated myelopathy/tropical spastic paraparesis is endemic in many geographic areas including Japan, the Caribbean, Africa, South and North America, and Melanesia,³ and infection rates vary widely in different geographic areas. It is estimated that 10–20 million individuals carry the virus worldwide. Seroprevalence increases with age and is twice as high in women.⁴ HTLV-I infection is endemic in Brazil and prevalence varies according to geographical

region.³ Brazil has an estimated 2.5 million infected individuals.⁵

Low-back pain is a frequent complaint in HAM/TSP and is included in the HAM/TSP diagnosis guidelines issued by the WHO (World Health Organization).⁶ Localized in the lumbar region with or without radiation to lower extremities,⁷ low-back pain in HAM/TSP can be linked to a low level of physical activity and high degree of disability, with prevalence ranging from 44.0 to 79.0%.^{8–13}

At the moment there are no specific studies on low-back pain in HAM/TSP patients; this study intends to describe the characteristics of low-back pain in HAM/TSP and to identify neuropathic and/or non-neuropathic pain characteristics.

Methods

The study was submitted and approved by the ethical committee of Clementino Fraga Filho University Hospital.

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Only patients who fulfilled the WHO's HAM/TSP diagnosis guidelines were included in the survey. The exclusion criteria were other concomitant neurological diseases, co-infection with HIV, diabetes and alcoholism (due to high prevalence of polyneuropathy in these diseases), and orthopedic diseases. All patients signed an informed consent.

A clinical protocol, which included Timed up and Go Test (TUG),¹⁴ Visual Analogue Scale (VAS) to assess pain intensity,¹⁵ Bodily Pain Domain of The Short Form 36 Health Status Questionnaire (SF-36),¹⁶ *Douleur Neuropathique 4 Questions* (Neuropathic Pain 4 Questions) (DN4)¹⁷ and the McGill Pain Questionnaire (MPQ),¹⁸ was performed.

Statistical analyses were performed using SPSS 11.0 for Windows. χ^2 -Test and Student's *t*-test were used to measure significant differences between the studied variables.

Results

The sample consisted of 90 individuals (63 women and 27 men) as characterized in Table 1. Of the 90 patients, 54 were community ambulators and 36 either household or wheelchair bound. The majority was independent, evaluated by self-care items (92.2%), sphincter management (97.8%), mobility/transfers (87.8%) and locomotion (75.6%). Average TUG was of 26.9 s (s.d. 18.7), ranging from 10 to 82 s.

A total of 75.5% of patients reported low-back pain. The sample was divided into two groups: patients without low-back pain ($n=22$) and patients with low-back pain ($n=68$). Both groups were evaluated by age, gender, first clinical manifestation, gait, TUG, independence in activities of daily living (ADL) and Bodily Pain Domain of the SF-36. No significant differences were found between the two groups, except with respect to Bodily Pain Domain of the SF-36, where the mean was 41.1% and 80.4% for the patients with and without low-back pain, respectively ($P<0.00$).

The mean duration of disease since onset of low-back pain was 5.22 years (s.d. 7.5) and mean duration of low-back pain was 11 years (s.d. 10.4). Low-back pain characteristics are described in Table 2.

Table 1 Characteristics of the sample ($n=90$ patients)

	Average	s.d.	Range	%
Age of onset	36.7 years	15.4	1–68 years	—
Duration of disease	15.7 years	10.9	1–60 years	—
<i>First clinical manifestation</i>				
Gait disturbances	—	—	—	75.5
Sphincter disturbances	—	—	—	18.8
Pain	—	—	—	5.7

Table 2 Characteristics of low-back pain ($n=68$ patients)

	%
Low-back pain located	63.2
Low-back pain radiated	36.8
Frequent pain (daily and weekly)	92.6
Pain interferes functional capacity	89.7

An average intensity of pain of 51.2 mm (s.d. 20.9) in the VAS was found. Seventy-three percent of patients with low-back pain had moderate or severe pain. The most frequent aggravating factors were movement (70.5%), cold weather (38.2%), remaining in a same position for a long time (36.7%) and physical effort (27.9%). The most frequent relief factors were analgesic drugs (73.5%) and rest (52.9%). The most usual analgesic drugs were common analgesics (44.1%), nonsteroidal anti-inflammatory drugs (NSAIDs) (42.6%) and tricyclic antidepressants (26.4%).

Average DN4 was 1.72 (s.d.1.5), ranging from 0 to 7 (Figure 1), and a high portion of patients (86.8%) scored lower than 4. These results determine the predominance of non-neuropathic pain.

The majority of participants considered low-back pain as their worst pain (67.6%), whereas remaining patients considered lower limb pain as their worst pain (32.4%) (Figure 2). The most frequent words used to describe low-back and lower limbs pain are presented in Table 3. Different descriptors were used, depending on location of pain. Descriptors for lower extremities pain characterize sensory disturbance that does not occur with descriptors for low-back region.

Discussion

The general epidemiologic characteristics of the sample ($n=90$) do not differ from that described in current literature. Patients were predominantly women (2.3:1). Some found it difficult to determine precisely the onset of disease, mostly because of the long duration of disease and the subtle and progressive installation of initial symptoms. This fact has also been described in other series.^{19,20}

The majority of individuals (60%) had community ambulation with a variety of levels of difficulty and speed. Gait disturbances were severe, 43.3% of patients needed walking aids and 24.4% were restricted to a wheelchair.

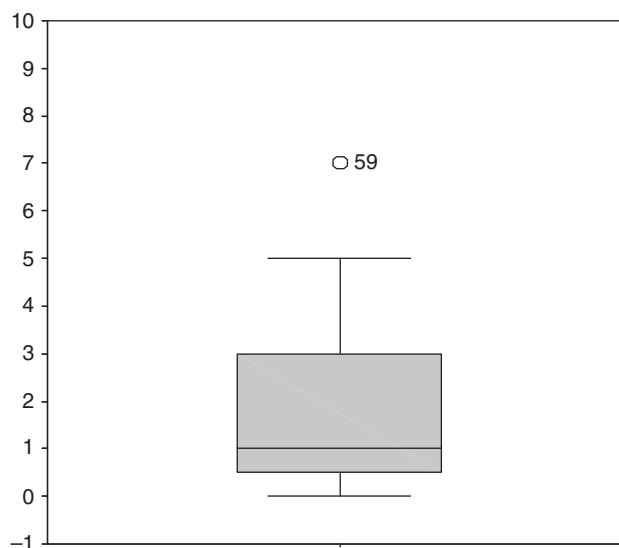


Figure 1 DN4 scores distribution ($n=68$).

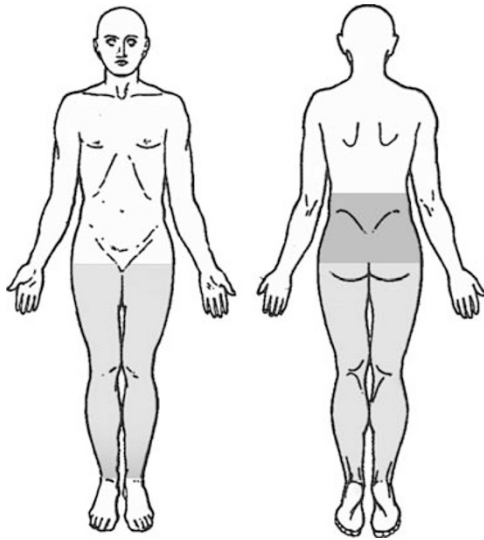


Figure 2 Pain distribution ($n = 68$).

Table 3 The most frequent words used to describe low-back pain and lower limbs pain

Low-back pain descriptors ($n = 46$)	Lower limbs pain descriptors ($n = 22$)
<i>Sensory</i>	
Throbbing (45.7%)	Burning (77.3%)
Burning (45.7%)	Heavy (68.2%)
Jumping (32.6%)	Pricking (36.4%)
Aching (30.4%)	Sharp (36.4%)
	Tingling (36.4%)
	Throbbing (31.8%)
	Flashing (31.8%)
	Tugging (31.8%)
<i>Affective</i>	
Tiring (54.3%)	Tiring (72.7%)
Sickening (50.0%)	Sickening (59.1%)
<i>Evaluative</i>	
Troublesome (45.7%)	Troublesome (45.5%)
<i>Miscellaneous</i>	
—	Jerking (40.9%)

The average TUG was 26.9 s, 2.6 times higher than the normal control,¹⁴ also evidence of severe gait disturbance.

Functional independence was assessed by daily activity performance, without assistance. The lowest levels of functioning were observed in locomotion (24.4%) and mobility/transfers (12.2%). In a previous study, using Functional Independence Measure (FIM), the more affected functional areas were bladder management (62.5%) and locomotion (34.7%).¹⁰ This can be explained by the fact that the FIM scale takes into account the state of continence in addition to independent management of the neurogenic bladder.

Low-back pain prevalence in the studied sample was of 75.5%. In current literature it varies between 44 and 79%,^{8–13}

and is sample size dependent, that is, has a positive correlation to sample size.

Low-back pain in this group is chronic, average duration of pain was 11 years and on average started during the first 5 years of the disease. We do not have a conclusive explanation for this fact, but we believe an inflammatory reaction in the initial stage of the disease can be the cause of pain.

A total of 63.2% patients had low-back localized pain, in 36.8% pain radiated to the legs. This result differs from the WHO diagnostic guidelines for HAM/TSP²¹ that indicate low-back pain with radiation to the lower limbs. These guidelines should also include low-back pain without radiation to the legs.

Low-back pain appears to be a constant symptom, with daily frequency and interference in functional capacity. The lowest scores of the Bodily Pain Domain of SF-36 were observed in the low-back pain group. These results suggest that low-back pain can be linked to lower levels of ADLs and consequently an increasing degree of disability. Therefore, low-back pain worsens the quality of life of these individuals.

Back-specific pain scales could not be used in this study, because they assess physical impairment associated with low-back pain. The Roland–Morris Questionnaire, for example, includes items such as ‘I walk more slowly than usual because my back’, or ‘I only walk short distances because of my back’. These scales are inappropriate, for they generate uncertainty whether physical impairment originated from limitations imposed by disease or from low-back pain itself.

Most patients (78.3%) had moderate to severe pain in VAS results. Considering that low-back pain is chronic and HAM/TSP patients have various levels of disability, pain intensity may contribute to greater restrictions.

Using MPQ, 32.4% of patients identified another important area of pain in addition to low-back pain. This supports the hypothesis of two important pain areas in this group: low-back and lower extremities.

The most frequent words used to describe low-back pain were throbbing, burning, jumping and aching. Conversely, the most frequent words used to describe low extremity pain were burning, heavy, pricking, sharp and tingling. Different descriptors were used to describe these two painful areas; the recurrent words for lower extremities pain suggest an associated sensory disturbance. This result is not convergent with Montgomery’s report²² in which sensory disturbance in the lower extremities tends to disappear within a few months after the disease has started.

The average DN4 was 1.72 and the majority of patients (86.8%) scored lower than 4. This result indicates the predominance of a non-neuropathic pain component of the low-back pain HAM/TSP patients.

The aggravating and relieving factors, descriptors and DN4 results suggest that low-back pain in this group of individuals is a nociceptive pain of musculoskeletal origin, justified by gait disturbance and by postural deviations that lead to an overload on the lumbar spine. Moreover, descriptors for pain in the lower extremities indicate a sensory disturbance and, consequently, a neuropathic pain.

The usual drugs used by these patients were common analgesics, NSAIDs and tricyclic antidepressants. Therefore,

pain treatment currently used in these patients does not follow WHO guidelines to pain control,²³ because patients suffered from chronic pain, with moderate to severe intensity, and only 4.4% used opioids.

In addition to analgesic drugs, physical therapy may be an important aid in pain control. This is the nonpharmacological treatment most commonly used after spinal cord injury,²⁴ and has demonstrated to decrease pain intensity and impact.²⁵ In this study, a small number of subjects participated in a formal physical therapy program. We did not gather information on the specific physical therapies (for example, ultrasound, exercise or other modalities), therefore we cannot draw conclusions on the impact of physical therapy intervention on the low-back pain group.

A limitation of the present study was the lack of additional tests (X-ray and electrophysiologic exams). X-ray examination could show degenerative abnormalities in the lumbar spine and electromyography and nerve conduction studies could identify the presence of concomitant peripheral neuropathy.

The study protocol should also consider associated psychological and behavioral factors such as depression, because emotional aspects are positively associated with pain. Another limitation of the study was the use of the DN4 only for low-back pain. When pain area was in the lower extremities, DN4 should be used in both areas (low-back and lower extremities).

Based on the results of this study, HAM/TSP patients should be routinely assessed to identify which type of pain is prevalent and significant. Only after this classification, one can propose a systematic approach to pain treatment.

Conclusions

Low-back pain is a prevalent complaint among HAM/TSP patients. Low-back pain characteristics, descriptors and DN4 results suggest that it is chronic and has a nociceptive component. Two painful areas were found: low back and lower extremities. The qualitative descriptors for the lower extremities pain were distinct and suggest a neuropathic origin. In addition to the motor disability of HAM/TSP, the presence of low-back pain significantly interferes with functional activities and may increase functional limitations.

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